

PATENTS  
7471/PPC/CMP/CKIM

**A M E N D M E N T**

**IN THE CLAIMS:**

Please AMEND Claims 1 and 5 and ADD new Claims 19 through 24 such that the pending claims will read as follows:

Claim 1 (Currently amended): An apparatus comprising:

a tank adapted to contain fluid and having vertical sidewalls;

at least one support component mounted in the tank and adapted to support a substrate in a supported position at least partially submerged in the fluid;

a transducer adapted to output sonic energy into the fluid at a bottom of the tank; and

a reflector mountable to one of the vertical sidewalls, positioned at a side of the substrate, and adapted to reflect the sonic energy away from a central region of the substrate and toward an edge of the substrate so as to provide a 100% cleaning duty cycle to the edge of the substrate;

wherein the reflector is positioned such that the reflector does not obstruct a path employed to load the substrate into the supported position and to unload the substrate from the supported position.

Claim 2 (Original): The apparatus of claim 1 wherein the reflector is entirely to the side of the substrate.

PATENTS  
7471/PPC/CMP/CKIM

Claim 3 (Original): The apparatus of claim 1 wherein the reflector is curved so as to focus the reflected sonic energy at the edge of the substrate.

Claim 4 (Original): The apparatus of claim 1 wherein the reflector reflects the sonic energy at an angle that corresponds to an angle of an edge bevel of the substrate.

Claim 5 (Currently amended): An apparatus comprising;

a tank adapted to contain fluid and having  
vertical sidewalls;

a plurality of rollers mounted in the tank and including at least one driven roller and adapted to support a substrate in a supported position at least partially submerged in the fluid while rotating the substrate;

a transducer adapted to output sonic energy into the fluid at a bottom of the tank;

a first reflector mounted mountable on a first vertical sidewall wall of the tank on and facing a first side of the substrate and adapted to reflect the sonic energy away from a central region of the substrate and toward an edge of the substrate; and

a second reflector mounted mountable on a second vertical sidewall wall of the tank on and facing a second side of the substrate and adapted to reflect the sonic energy away from a central region of the substrate and toward the edge of the substrate;

wherein:

the first and second reflectors are adapted to provide a 100% cleaning duty cycle to the edge of the substrate; and

PATENTS  
7471/PPC/CMP/CKIM

the first and second reflectors are positioned such that the first and second reflectors do not obstruct a path employed to load the substrate into the supported position and to unload the substrate from the supported position.

Claim 6 (Original): The apparatus of claim 5 wherein the reflectors reflect the sonic energy at angles that correspond to angles of an edge bevel of the substrate.

Claim 7 (Original): The apparatus of claim 5 wherein the reflectors are curved so as to focus the reflected sonic energy at the edge of the substrate.

Claim 8 (Original): The apparatus of claim 5 wherein the transducer is positioned below the rollers.

Claim 9 (Withdrawn): A method for cleaning a substrate comprising:

providing an apparatus that includes:  
a tank containing fluid;  
at least one support component mounted in the tank and adapted to support a substrate in a supported position at least partially submerged in the fluid;  
a transducer adapted to output sonic energy into the fluid; and  
a reflector positioned at a side of the substrate and adapted to reflect the sonic energy toward an edge of the substrate;

PATENTS  
7471/PPC/CMP/CKIM

loading the substrate into the tank without moving the reflector;

supporting the substrate in the tank, wherein the substrate is at least partially submerged in the fluid;

outputting sonic energy through the fluid;  
and

reflecting the sonic energy off of the reflector toward an edge of the substrate.

Claim 10 (Withdrawn): The method of claim 9 further comprising unloading the substrate from the tank without moving the reflector.

Claim 11 (Withdrawn): The method of claim 9 wherein reflecting the sonic energy toward an edge of the substrate includes reflecting the sonic energy toward the edge of the substrate so as to provide a 100% duty cycle.

Claim 12 (Withdrawn): The method of claim 9 further comprising focusing the reflected sonic energy at the edge of the substrate.

Claim 13 (Withdrawn): The method of claim 9 wherein reflecting the sonic energy toward an edge of the substrate includes reflecting the sonic energy at an angle that corresponds to an angle of an edge bevel of the substrate.

Claim 14 (Withdrawn): A method for cleaning a substrate comprising:

providing an apparatus that includes:  
a tank containing fluid;

PATENTS  
7471/PPC/CMP/CKIM

a plurality of rollers mounted in the tank and including at least one driven roller and adapted to support a substrate in a supported position at least partially submerged in the fluid while rotating the substrate;

a transducer adapted to output sonic energy into the fluid;

a first reflector mounted on a first wall of the tank and facing a first side of the substrate and adapted to reflect the sonic energy toward an edge of the substrate; and

a second reflector mounted on a second wall of the tank and facing a second side of the substrate and adapted to reflect the sonic energy toward the edge of the substrate;

loading the substrate into the tank without moving the first and second reflectors;

supporting the substrate in the tank, wherein the substrate is at least partially submerged in the fluid;

outputting sonic energy through the fluid;  
and

reflecting the sonic energy off of the first and second reflectors toward an edge of the substrate.

Claim 15 (Withdrawn): The method of claim 14 further comprising unloading the substrate from the tank without moving the first and second reflectors.

Claim 16 (Withdrawn): The method of claim 14 wherein reflecting the sonic energy toward an edge of the substrate

PATENTS  
7471/PPC/CMP/CKIM

includes reflecting the sonic energy toward the edge of the substrate so as to provide a 100% duty cycle.

Claim 17 (Withdrawn): The method of claim 14 further comprising focusing the reflected sonic energy at the edge of the substrate.

Claim 18 (Withdrawn): The method of claim 14 wherein reflecting the sonic energy toward an edge of the substrate includes reflecting the sonic energy at an angle that corresponds to an angle of an edge bevel of the substrate.

Claim 19 (New): An apparatus comprising:

a tank adapted to contain fluid and having vertical sidewalls;

at least one support component mounted in the tank and adapted to support a substrate in a supported position at least partially submerged in the fluid;

a transducer adapted to output sonic energy into the fluid at a bottom of the tank; and

a reflector mountable to one of the vertical sidewalls, positioned at a side of the substrate, and adapted to reflect the sonic energy toward an edge of the substrate so as to provide a 100% duty cycle;

wherein the reflector is positioned such that the reflector does not obstruct a path employed to load the substrate into the supported position and to unload the substrate from the supported position; and

wherein the reflector reflects the sonic energy at an angle that corresponds to an angle of an edge bevel of the substrate.

PATENTS  
7471/PPC/CMP/CKIM

Claim 20 (New): The apparatus of claim 19 wherein the reflector is interchangeable with a plurality of differently shaped reflectors.

Claim 21 (New): The apparatus of claim 20 wherein the interchangeable reflector is curved and adapted to focus the sonic energy on the edge of the substrate.

Claim 22 (New): An apparatus comprising;  
a tank adapted to contain fluid and having vertical sidewalls;  
a plurality of rollers mounted in the tank and including at least one driven roller and adapted to support a substrate in a supported position at least partially submerged in the fluid while rotating the substrate;  
a transducer adapted to output sonic energy into the fluid at a bottom of the tank;  
a first reflector mountable on a first sidewall of the tank and facing a first side of the substrate and adapted to reflect the sonic energy toward an edge of the substrate; and  
a second reflector mountable on a second sidewall of the tank and facing a second side of the substrate and adapted to reflect the sonic energy toward the edge of the substrate;  
wherein:  
the first and second reflectors are adapted to provide a 100% duty cycle;  
the first and second reflectors are positioned such that the first and second reflectors do not obstruct a

PATENTS  
7471/PPC/CMP/CKIM

path employed to load the substrate into the supported position and to unload the substrate from the supported position; and

the reflectors reflect the sonic energy at angles that correspond to angles of an edge bevel of the substrate.

Claim 23 (New): The apparatus of claim 22 wherein the first and second reflectors are interchangeable with a plurality of differently shaped reflectors.

Claim 24 (New): The apparatus of claim 23 wherein the interchangeable reflectors are curved and adapted to focus the sonic energy on the edge of the substrate.